

From the INTERNATIONAL BUREAU

P514-PCT

**PCT**NOTIFICATION CONCERNING  
TRANSMITTAL OF COPY OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY  
(CHAPTER I OF THE PATENT COOPERATION  
TREATY)

(PCT Rule 44bis, 1(c))

To:

BAILEY WALSH & CO LLP  
5 York Place  
Leeds LS1 2SD  
ROYAUME-UNI

Date of mailing (day/month/year)

08 September 2006 (08.09.2006)

Applicant's or agent's file reference

AT-MS-G34984

**IMPORTANT NOTICE**

International application No.

PCT/GB2004/000724

International filing date (day/month/year)

23 February 2004 (23.02.2004)

Priority date (day/month/year)

Applicant

OXFORD GEOSERVICE LIMITED et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

12 SEP 2006

The International Bureau of WIPO  
34, chemin des Colombettes

Authorized officer

Dorothea Milhousen

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference AT-MS-G34984	FOR FURTHER ACTION		See item 4 below
International application No. PCT/GB2004/000724	International filing date ( <i>day/month/year</i> ) 23 February 2004 (23.02.2004)	Priority date ( <i>day/month/year</i> )	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant OXFORD GEOSERVICE LIMITED			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Box No. I  | Basis of the report   |
| <input checked="" type="checkbox"/> Box No. II | Priority  |
| <input type="checkbox"/> Box No. III           | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/> Box No. IV            | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V  | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI            | Certain documents cited   |
| <input type="checkbox"/> Box No. VII           | Certain defects in the international application  |
| <input type="checkbox"/> Box No. VIII          | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).

Date of issuance of this report  
30 August 2006 (30.08.2006)

Authorized officer

Dorothee Mülhausen

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Publication No. 41 22 230 02 70

# PATENT COOPERATION TREATY

RECEIVED

20 SEP 2004

WIPO PCT

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2004/000724

International filing date (day/month/year)  
23.02.2004

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC  
G01V3/28

Applicant  
OXFORD GEOSERVICE LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office  
D-80293 Munich  
Tel. +49 89 2399 - 0 Tx: 523655 eprnu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Schneiderbauer, K

Telephone No. +49 89 2399 5511



WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/GB2004/000724

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/GB2004/000724

---

Box No. II Priority

---

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

---

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

---

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1
Inventive step (IS)	Yes: Claims	
	No: Claims	3,5,7,9
Industrial applicability (IA)	Yes: Claims	all
	No: Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)

International application No.

PCT/GB04/00724

The examination is being carried out on the following application documents:

Text for the Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL PL PT RO SE SI  
SK TR

Description, pages:

13-34 as originally filed

Claims, No.:

1-10 as originally filed

Drawings, sheets:

1/10-10/10 as originally filed

Reference is made to the following documents:

D1: US-A-5260661 (Vail)	09-11-1993
D2: US-A-6147496 (Van der Horst)	14-11-2000
D3: US-A-5999883 (Kriegshauser)	07-12-1999
D4: US-A-2003011371 (Rosthal)	16-01-2003
D5: US-A-5652519 (Robinson)	29-07-1997
D6: US-A-2003030439 (Gao)	13-02-2003

1.) Independent claim 1 is not clear (**Art. 6 PCT**).

Claim 1 claims an apparatus for induction well logging comprising 4 different transmitter-receiver configurations at once. It is clear from the description that each of these configurations is thought as an alternative embodiment describing 4 different possibilities of a coil set-up for such a well logging apparatus.

Claim 1 has been interpreted accordingly in the further examination as comprising 4 different alternatives for a transmitter-receiver configuration. Alternatives (a) and (b) of claim 1 will be discussed in point 2, alternatives (c) and (d) of claim 1 will be discussed in point 3 of this letter.

2.) The present application does not meet the requirements of **Article 33(1),(2) PCT**, because the subject-matters of embodiments (a) and (b) of claim 1 are not new.

D1 discloses an apparatus for conductivity wellbore logging comprising two transmitter coils (fig.1, ref. S1, S2) and (at least) two receiver coils (fig.1, ref. I1, I2 and I3) with

parallel magnetic moments and where the distance between the receivers (fig.1, "D") and between the transmitters (fig.1; "D"), respectively, is much smaller than the distance between receivers and transmitters. The voltage which is received in the receiver coils (V1, V2 and V3) is provided to means for measuring a difference between the voltages in the different pairs of receivers (D1; col. 6, li.25-29; col.7, li.8-28), or due to the different pairs of transmitters (col.7, li.4-44).

3.) The subject-matters of embodiments (c) and (d) of claim 1 are not new (**Art. 33(1),(2) PCT**). These embodiments describe tri-axial EM induction measurement systems for borehole logging, consisting of special coil configurations for the transmitters and receivers.

D2 describes an induction logging system comprising two sets of tri-axial transmitters and two sets of tri-axial receivers (D2; fig.2). Two frequencies (f1 and f2) are applied to the transmitters and the responses in the receiver coils are combined (i.e. the difference is measured; s. equations 3 and 4) in order to cancel borehole effects (D2; col.4, li.28-62; col.5, li.14-51; col.6, li.11-27; fig.2).

4.) The subject-matters of independent claims 3, 5, 7 and 9.

The methods claimed in these independent claims refer to inversion processes from which horizontal and vertical conductivities are calculated. The inversion is applied to measurements which have been carried out with systems as claimed in claim 1.

However, calculating horizontal and vertical conductivity data for earth formations surrounding a borehole is perfectly known in the art; s. f.ex. D3 (D3; col.2, li.49-64 and col. 16, li.61-65). Such methods, as claimed in these claims, are therefore not considered to be inventive (**Art. 33(1),(3) PCT**).

5.) The dependent claims.

At the present stage there seems to be no inventive contribution (**Art. 33(1),(3) PCT**) of dependent claims 2, 4, 6, 8 and 10 which refer to constructional details of the systems as claimed in claim 1 or to their use in the methods as claimed in the independent method claims. These details appear to be a matter of normal design procedure which has to be carried out in order to use a system/method as claimed in the independent claims.

6.)Remarks: The independent claims have been drafted in such a general way that any document which comprises a transmitter-receiver configuration and which measures the difference between two receiver outputs can be used for novelty assessment of these claims. See f.ex. D4 and D5 (cited passages in the ISR). Also D4 could be used in the further examination with regard to the embodiments comprising tri-axial coil configurations. D4 discloses an induction system generating cross-coupling measurements between tri-axial transmitters and receivers in order to determine the dip angle.

7.) Should the applicant regard some particular matter as new and inventive, the following points should be taken into consideration:

7.1) **The claims should be concise (Art.6 PCT):** the applicant is requested to draft one independent claim per category (one independent method claim and one independent apparatus claim) and make the other claims dependent claims on these independent claims.

7.2) **The independent claims should be clear (Art. 6 PCT):** all features necessary to carry out a method as claimed and to define the structural features of an apparatus as claimed should be included in the independent claims.

7.3) The applicant should also **indicate in the letter of reply the difference** of the subject-matter of the new claims vis-à-vis the state of the art and the significance thereof.

7.4) In order to expedite the procedure, the applicant is requested to **indicate in his reply the passages** in the application as originally filed which form the basis of the amendments. The applicant respectfully is reminded of **Art.19(2) PCT** which says that the amendments shall not go beyond the disclosure in the international application as originally filed.